ECO FLASH

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Pressure on central bank liquidity is going undetected

Céline Choulet

- **Since 20 March, American banks have been making overnight transactions with base money at higher rates than the US Federal Reserve pays on their current accounts.**
- **At a time of abundant central bank reserves (compared to pre-crisis standards), this unusual structure for money market rates comes as a surprise.**
- **This rate structure reflects the tensions on central bank liquidity over the past year, in terms of both demand (driven up by new liquidity requirements) and supply (squeezed by a more attractive repo market).**
- **Without an intensification of transactions in the interbank market, the Fed is unlikely to change its decision to continue reducing its balance sheet through the end of September.**
- **Yet there are clear signs that central bank liquidity is under pressure, although it is going undetected because it is occurring outside of the money market and thus off the monetary authorities' radar.**
- **In the end, the Fed may have to reinject central bank money notably via Treasury repurchase agreements (repos). Reducing reverse repo operations with foreign central banks would be a faster solution that would not change the size of its balance sheet.**

On 20 March, the Effective Fed Funds Rate (EFFR), the interest rate that banks charge each other for overnight loans of funds, was 2.41%. For the first time since 2008, EFFR exceeded the rate that the Fed pays on the banks' current accounts: interest on required reserves (IORR) and interest on excess reserves (IOER) was set at 2.4% on 20 December 2018. On 27 March, the EFFR/IOER yield spread widened as the effective Fed funds rate rose to 2.43% (chart 1).

An unusual rate structure

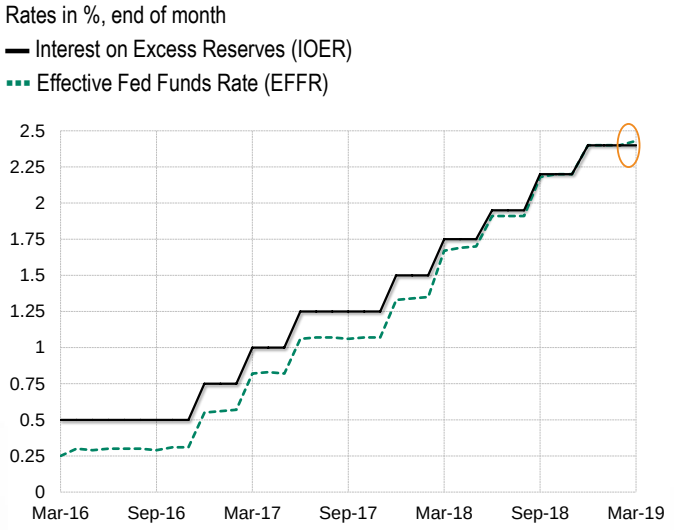

Chart 1 Source: Macrobond

IOER never acts as the floor rate

Eleven years ago, there would be nothing surprising about this rate structure. When it was introduced in December 2008, the IOER was supposed to serve as the floor rate for the effective Fed funds rate (EFFR), since banks would not be acting in their interest if they lent base money to another bank at a rate lower than IOER. Yet alongside the introduction of IOER, the Federal Reserve also launched a vast quantitative easing (QE) programme that automatically swelled bank reserves with the Fed[1]. At a time of abundant reserves, the

[1] C. Choulet (2015), *QE and bank balance sheets: the American experience*, BNP Paribas, Conjoncture, July-August 2015

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demand for Federal funds naturally diminished, placing downward pressure on money market rates. The Federal Home Loan Banks (FHLB)[2], which do not earn interest on their deposits with the Fed, also continued to lend central bank liquidity at a rate below IOER, which also helped hold down short-term rates. Transaction volumes in the Fed funds market remained moderate, and EFFR held below IOER, at least until 20 March 2019.

Central bank liquidity constraints

Constraints on central bank liquidity have increased significantly as a result of the Basel 3 banking regulations[3].

Since the introduction of the Liquidity Coverage Ratio (LCR) in 2015, banks are required to hold reserves, or more generally high-quality liquid assets (HQLA), to cover the theoretical net outflow of cash over 30 days in the event of a severe liquidity crisis (based on the theoretical flight of deposits and the non-replacement of other short-term resources, defined by the regulator). Reserves at the central bank may therefore exceed the volume required under monetary policy (required reserves) but nevertheless be insufficient to comply with the overall liquid asset requirement. Looking beyond the LCR requirement, its transposition into the body of specific rules for the resolution plans of very big banks was seen as a particularly restrictive move[4] (see below).

When liquidity requirements were first introduced, there was a particularly abundant supply of bank reserves (the natural impact of QE), but it has since diminished. When QE came to an end in October 2014, reserves peaked at more than USD 2,820 billion. Since then, monetary policy measures (repo transactions and the Fed's balance sheet reduction programme), combined with the upturn in the volume of currency in circulation and issues of Treasury bills, have reduced this stock (chart 2)[5]. At 27 March, bank reserves stood at USD 1,630 billion.

The central bank reduced the supply of reserves just as the regulator increased the need for them. This may have increased the demand for Fed funds, at least marginally (see below). At the same time, however, the increase in Treasury bond issues turned traditional lenders (*Federal Home Loan Banks*) away from the Fed funds market and towards repo markets offering higher interest rates. In 2018, this same factor helped boost the EFFR rate, bringing it in line with IOER.

Tools for draining central bank liquidity

USD bn

Change in central bank reserves since October 2014

Reserves drained via increases in other Fed liabilities (currency in circulation, Treasury general account, GSE and CCP accounts, reverse repos)

Reserves drained via a reduction in the Fed's securities portfolio

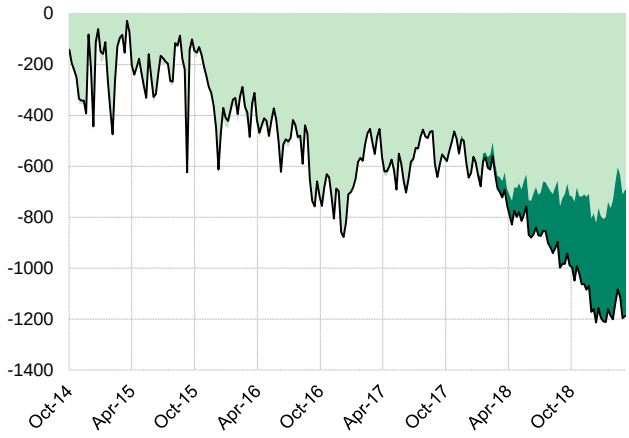

Chart 2 Source: Federal Reserve, BNP Paribas

Liquidity needs are hard to evaluate

For several years now, the US monetary authorities try to evaluate to what extent liquidity requirements affect the aggregate demand for reserves. In 2017[6], the Federal Open Market Committee (FOMC) stated that it would continue to reduce the Fed's balance sheet until the supply of reserves was brought to a level "appreciably lower" than that observed in recent years, but higher than pre-crisis levels. The committee expected *"to learn more about the underlying demand for reserves during the balance sheet normalization process"*. Nearly two years later, on 20 March 2019[7], Fed Chairman Jerome Powell admitted that despite efforts to estimate the reserve demand of banks, the FOMC had not managed to come to a precise and definitive conclusion on the subject: *"The truth is, we don't know. It may evolve over time. So we'll just have to see."* Yet the FOMC announced that it plans to slow the pace of reducing the Fed's balance sheet as of May, before halting it at the end of September[8]. By then the FOMC esteems that the average level of reserves will still be *"somewhat above the level of reserves necessary"* to maintain control over short-term rates (i.e. to keep EFFR from exceeding the upper limit of the Fed funds target range). In the light of the Fed's new balance sheet normalisation plan, reserves could be reduced to USD 1,300 billion at the end of September[9].

[2] Credit cooperatives responsible for supporting residential mortgage market financing through secured loans (advances) to their members (commercial banks, savings banks, insurance companies).

[3] Before Basel 3, all reserves in excess of required reserves were justifiably treated as excess reserves. Banks without sufficient reserves to meet the minimum requirement had to borrow from the central bank or from other banks on the Fed Funds market.

[4] The Fed and the FDIC published their recommendations for 2017 resolution plans in April 2016. Specific recommendations for the eight G-SIB were released in April 2018: https://www.fdic.gov/news/news/press/2018/pr18040.pdf. Certain major US banks then reported the more constrictive nature of these recommendations, compared to LCR, in the management of their liquidity: https://bpi.com/rethinking-living-will-liquidity-requirements/

[5] C. Choulet (2018), *Will central bank reserves soon become insufficient?*, BNP Paribas, Conjoncture, December 2018

[6] Addendum to the Policy Normalization Principles and Plans: https://www.federalreserve.gov/newsevents/pressreleases/monetary20170614c.htm

[7] Transcript of the press conference: https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20190320.pdf

[8] Monetary Policy Normalization Programme: https://www.federalreserve.gov/newsevents/pressreleases/monetary20190320c.htm

[9] This estimate is highly dependent on the assumptions used for changes in the Fed's liabilities, excluding reserves.

Last February, based on LCR reports for second-quarter 2018, Bush, Kirk, Martin, Weed and Zobel (2019)[10] estimated that the eight largest American banks[11] (i.e. those classified as global systemically important banks, G-SIBs) would collectively need USD 784 billion in central bank reserves to cover the net cash outflows that could occur in a single business day under a "central" stress scenario, or more than USD 930 billion under a more acute scenario. With nearly USD 1,800 billion in surplus central bank reserves (in the monetary sense of the term) at the aggregate level, the authors conclude that the supply of reserves at end-June 2018 more than sufficed to cover the banks' needs.

Our analysis leads us to a different conclusion. First, in second-quarter 2018, the central bank reserves comprised of HQLA for the eight US G-SIBs amounted to USD 956 billion, which corresponds to the upper range of the estimated cash outflows. Even though the eight G-SIBs together account for more than half of so-called excess reserves, they are not the only banks subject to LCR standards. Second, the calculation only covers a single business day. Using the regulator's 30-day horizon, the G-SIBs estimate the theoretical net outflows at more than USD 1,870 billion, which is comparable to the amount of excess reserves for the entire US banking system at end-June 2018.

Of course, bank reserves are not the only high-quality liquid assets. Yet as the authors point out, the liquidity service provided by bank reserves is unique. It is the only liquid asset that does not need to be monetized (since it is already money), and the only one with a constant value (as opposed to market stress resulting in an abrupt upturn in long-term rates, which would depress the value of the banks' Treasury portfolios). In fourth-quarter 2018, for example, G-SIB reserves comprised of HQLA covered between 30% and 77% of their theoretical net cash outflows over 30 days (chart 3).

Tensions are no longer arising where expected

Transaction volumes in the Fed funds market have increased only moderately since the beginning of the year. According to the monetary authorities, however, a shortage of central bank liquidity at the aggregate level can only occur once unsecured interbank lending intensifies at rates higher than IOER.

To the contrary, we believe that clear signs of tensions can already be detected, but they can be found outside of the money market.

Indeed, overnight borrowing of Fed funds is not the most appropriate way for the very big banks to respond to their specific liquidity requirements. As part of their resolution plans, the regulator requires them to cover theoretical net cash outflows not on a daily basis but on an intra-day basis. In the Fed funds market, however, the funds borrowed are generally repaid early next day and trades renewed at noon. As a result, the banks do not have access to this liquidity for several hours.

FHLB deposits with banks, in contrast, which the regulator considers to be a relatively stable resource, provide very big banks with a better intra-day liquidity position (low probability of deposit flight). FHLB deposits have increased rapidly since third-quarter 2017, as well as the interest they earn (2.71% in fourth-quarter 2018[12], chart 4), which are the two main symptoms of the tensions squeezing central bank liquidity.

Reserves cover only 37% of theoretical outflows

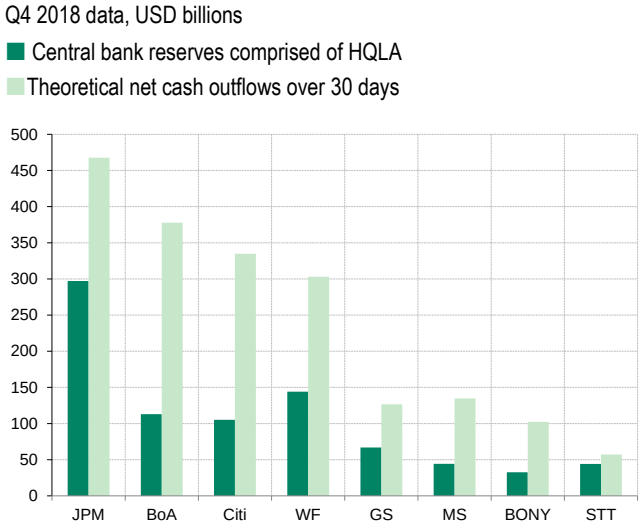

Chart 3 Source: LCR statements, reports, BNP Paribas

A readily available tool for boosting reserves

To ease the pressure on short-term rates, the US Federal Reserve might opt to set up repurchase agreements (repos)[13]. Through this facility, the Fed grants banks guaranteed loans (cash against Treasuries). All other factors being the same, once these operations end, the banks would increase their central bank reserves.

In the light of current tensions, however, it might be too late to set up repo operations. To act more quickly, the Fed could turn to another leverage[14]. It could place a ceiling on the volume of reverse repo operations concluded with foreign central banks[15] (outstandings have averaged USD 240 billion since 2016) and/or on interest paid (1.97% in the third quarter according to our estimates[16]).

[10] R. Bush, A. Kirk, A. Martin, P. Weed and P. Zobel (2019), *Stressed outflows and the supply of central bank reserves*, Federal Reserve Bank of New York's Liberty Street Economics blog, February 2019

[11] JP Morgan, Bank of America, Citigroup, Wells Fargo, Goldman Sachs, Morgan Stanley, Bank of New York Mellon and State Street

[12] Each year, when they publish their quarterly financial statements, the FHLBs report the average interest rate on bank deposits for the first three quarters of the year. The average annual rate is published in the annual report.

[13] The Saint Louis Federal Reserve Bank argues in favour of this mechanism: https://www.stlouisfed.org/on-the-economy/2019/march/why-fed-create-standing-repo-facility

[14] Z. Pozsar (2019), *It's time to use the exorbitant privilege,* Global Money Notes #21, Credit Suisse Economics, March 2019

[15] Since foreign central banks do not have accounts with the Fed, these operations are made via bank balance sheets. As the counterparty in reverse repos with a foreign central bank, the Fed reduces the reserves of the commercial bank playing the intermediary role, which in turn debits the current account in dollars of its client (the foreign central bank). These operations have had a non-negligible impact on draining reserves in recent years.

[16] The Fed does not report the interest rate on these operations continuously. It only provides the average rates for the first 3 months, 6 months and 9 months of each year in the publication of its quarterly

By introducing a cap, the Fed would be able to free up space on its balance sheet for bank reserves (without swelling its balance sheet again). This would also help improve the banks' liquidity positions, assuming it boosts central bank deposits with commercial banks. Alternatively, it might help ease pressures on short-term Treasury yields by encouraging foreign central banks to rebuild their investment portfolios (they held more than USD 570 billion in T-bills in June 2009, compared to only USD 330 billion in June 2018)[17].

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Undetected

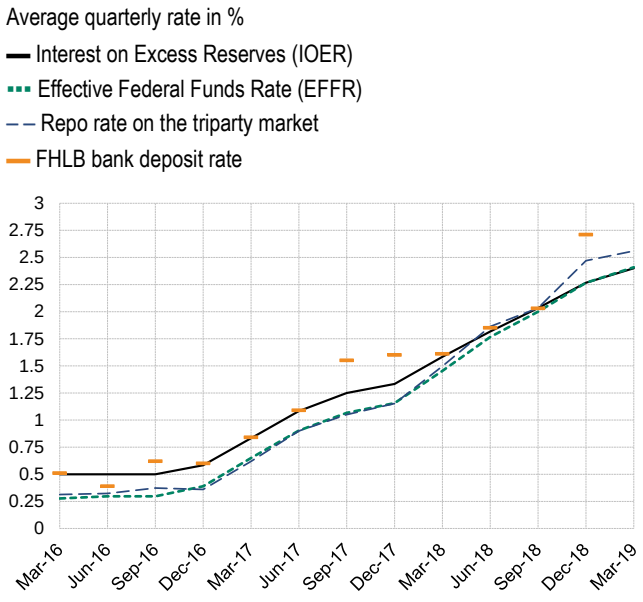

Chart 4 Source: Macrobond, FHLB, BNP Paribas

financial statements (unaudited). We have extrapolated assumptions based on quarterly interest rates.

[17] Although these operations helped ease pressures on Treasury yields (by turning foreign central banks away from the Treasury market at a time when monetary funds were constrained to increase their exposure to public debt), under current circumstances (high net issues of short-term instruments), they seem to be counterproductive.

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